

**ABSTRACT**

An apparatus for calcining gypsum including a housing having a bottom wall, open top, and a plurality of side walls extending therebetween. A fixture is located adjacent the open top for receiving gypsum from a source and transferring the gypsum into the housing. At least one burner is connected to the housing and operable for combusting an air-fuel mixture to heat the gypsum. At least one serpentine burner conduit extends from the burner through the housing and terminates through a support floor of the apparatus. The exhaust flow is then directed through a fluidization pad and into the gypsum to further heat the gypsum product. An agitation mechanism is operable to mix the gypsum adjacent the fluidization pad to prevent pockets of gypsum from coagulating and preventing fluidization of the gypsum.